

AMENDMENTS TO THE CLAIMS:

Please amend the claims as follows. This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) A method comprising:

configuring a virtualization layer to interface between a host and at least one storage device, wherein the virtualization layer defines at least one virtual volume comprising objects defining a mapping from the at least one virtual volume to data in the at least one storage device, wherein the objects are distributed across more than one processor in the virtualization layer and comprise a virtualization database;

storing information about a state of the at least one storage device in the virtualization database;

establishing a state manager for each processor, wherein the state manager monitors the state of the at least one storage device;

issuing a quiescence instruction to the state manager for each processor; and

responsive to receiving ~~[[a]]~~ the quiescence instruction by the state manager,

halting long term operations underway at the time the quiescence instruction is received~~[[:]]~~, and

completing short term operations comprising operations that are other than long term operations and that are underway at the time the quiescence instruction is received.

2. (Original) The method of claim 1, further comprising:

issuing the quiescence instruction when a storage device fails.

3. (Original) The method of claim 1, further comprising:
issuing the quiescence instruction when a processor fails.
4. (Previously Presented) The method of claim 1, further comprising:
receiving notification from the state manager when short term operations are completed and long term operations are halted.
5. (Previously Presented) The method of claim 1, wherein the short term operations include at least one of a read operation and a write operation.
6. (Previously Presented) The method of claim 1, wherein the long term operations include at least one of rebuilding a virtual volume and scrubbing a virtual volume.
7. (Previously Presented) The method of claim 4, further comprising:
reconfiguring the virtualization layer after the notification has been received from the state manager.
8. (Previously Presented) The method of claim 7, wherein configuring further comprises configuring the virtualization layer not to interface with a device that has failed.

9. (Previously Presented) A system comprising:

a plurality of storage devices storing data corresponding to a host;

a virtualization layer between the host and the plurality of storage devices, the virtualization layer comprising objects defining a mapping from at least one virtual volume to data in the plurality of storage devices, wherein the objects are distributed across more than one processor in the virtualization layer and comprise a virtualization database,

the virtualization database storing information about a state of each of the plurality of storage devices;

a plurality of processors, each processor having a state manager that monitors the state of at least one of the plurality of storage devices corresponding to the processor, that receives a quiescence instruction in response to a change in the state of one of the plurality of storage devices, and, responsive to receiving the quiescence instruction, halts long term operations underway at the time the quiescence instruction is received and completes short term operations comprising operations that are other than long term operations and that are underway at the time the quiescence instruction is received.

10. (Previously Presented) The system of claim 9 wherein

one of the plurality of processors comprises a master processor that issues the quiescence instruction in response to a failure of one of the plurality of storage devices.

11. (Previously Presented) The system of claim 10, wherein each processor's state manager further notifies the master processor when short term operations are complete and long term operations are halted.

12. (Previously Presented) The system of claim 11, wherein the master processor further reconfigures the virtualization layer after notification is received from each processor's state manager that short term operations are complete and long term operations are halted.

13. (Canceled).

14. (Currently Amended) A system for dynamically updating storage associated with a host, comprising:

means for configuring a virtualization layer to interface between the host and at least one storage device wherein the virtualization layer defines at least one virtual volume comprising objects defining a mapping from the at least one virtual volume to data in the at least one storage device, wherein the objects are distributed across more than one processor in the virtualization layer and comprise a virtualization database;

means for storing information about a state of the at least one storage device in the virtualization database;

means for receiving data about a new state of the at least one storage device;

means for updating the virtualization database with the data about the new state of the at least one storage device;~~and~~

means for updating the mapping contained in the objects based on the data about the new state of the at least one storage device;

means for receiving a quiescence instruction;

means for halting long term operations underway at the time the quiescence instruction is received; and

means for completing short term operations comprising operations that are other than long term operations and that are underway at the time the quiescence instruction is received.

15. (Canceled).

16. (Previously Presented) The system of claim 14, wherein the updating is responsive to the storage device becoming an available storage device.

17. (Previously Presented) The system of claim 14, wherein the updating is responsive to the storage device becoming an unavailable storage device.

18. (Previously Presented) The system of claim 17, further comprising:

means for reconfiguring the virtualization layer after the mapping has been updated to form a reconfigured virtualization layer, wherein the reconfigured virtualization layer does not interface with the unavailable storage device.

19. (Previously Presented) The system of claim 16, further comprising:

means for reconfiguring the virtualization layer after the mapping has been updated to form a reconfigured virtualization layer, wherein the reconfigured virtualization layer interfaces with the available storage device.

20. (Currently Amended) A tangibly-embodied computer-readable medium containing code for directing a processor to perform a method for dynamically updating storage associated with a host, the method comprising:

configuring a virtualization layer to interface between the host and at least one storage device wherein the virtualization layer defines at least one virtual volume comprising objects defining a mapping from the virtual volume to data in the at least one storage device, wherein the objects are distributed across more than one processor in the virtualization layer and comprise a virtualization database;

storing information about a state of the at least one storage device in the virtualization database;

receiving data about a new state of the at least one storage device;

updating the virtualization database with the data about the new state of the at least one storage device;~~and~~

updating the mapping contained in the objects based on the data about the new state of the at least one storage device;

receiving a quiescence instruction; and

responsive to receiving the quiescence instruction,

halting long term operations underway at the time the quiescence instruction is received, and
completing short term operations comprising operations that are other than long term operations and that are underway at the time the quiescence instruction is received.

21. (Canceled).

22. (Previously Presented) The computer-readable medium of claim 20, wherein the updating is responsive to the storage device becoming an available storage device.

23. (Previously Presented) The computer-readable medium of claim 20, wherein the updating is responsive to the storage device becoming an unavailable storage device.

24. (Previously Presented) The computer-readable medium of claim 23, the method further comprising:

reconfiguring the virtualization layer to form a reconfigured virtualization layer after the mapping has been updated, wherein the reconfigured virtualization layer does not interface with the unavailable storage device.

25. (Previously Presented) The computer-readable medium of claim 22, the method further comprising:

reconfiguring the virtualization layer to form a reconfigured virtualization layer after the mapping has been updated, wherein the reconfigured virtualization layer interfaces with the available storage device.